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One hundred and seventy pages are devoted to the *rôle* of the mineral elements in plants. It is probably safe to say that never before has this subject been so scientifically treated, nor has such a wide range of analyses been collected into one work. In no other part of the work does the author show greater breadth of mind and freedom from provincial ideas than in dealing with this oft-debated subject. The discussion treats in separate chapters the *rôle* of the elements in bacteria and fungi, in seeds, in subterranean storage organs, in buds, in the wood of trees, in the bark of trees, in leafy organs (including mosses and ferns), in algæ, in pollen grains, in fruits, and in roots. Not merely are many tables of analyses given, but there is discussion upon the probable value and function of each element to the plant. Much discussion is given to the probable *rôle* of elements like calcium and magnesium, on which much work has been done. In the particular case of these elements, the author brings together the results of a large number of workers with great justice and precision. The work of Loew is naturally given much prominence, yet he thinks that that author has not in all cases taken a sufficiently broad view of the facts, since too great importance is undoubtedly attached to the antagonism of calcium and magnesium.

The last chapter of the book is devoted to a discussion of the responses of plants to chemical stimuli. Under different headings there is brought together the work on the stimulation of protoplasmic streaming; the stimulation of nuclear and cell division; the stimulation of growth by toxic substances; the formative effect of chemical stimuli upon vegetative and reproductive organs.

The book is indispensable to all workers in physiology, whether of plants or animals, as well as in physiological and organic chemistry.

H. S. R.

Lacouture's Liverworts of France.¹ — This elaborate monograph takes the form of a synoptical key which is arranged in three series of tables; the first gives the characters of the tribes, the second of the genera, and the third of the species. Seventy-five genera containing two hundred and twenty-five species are described.

The characters upon which the classification rests are almost entirely those of the vegetative structures, and they are minutely depicted.

¹ Lacouture, Ch. *Hépatiques de la France. Tableaux synoptiques des caractères saillants des tribus, des genres et des espèces.* Paris, P. Klincksieck., 1905. 4 to 77 pp., 200 figures.

The description of each species is accompanied by a distinct figure showing the characteristics of the plant, especially those upon which the classification is based.

Several new genera are created by raising subgenera to the rank of genera. *Jungermannia* is divided to form the genera *Sphenobolus*, *Lophozia*, and *Aplozia*; likewise, *Riccia* is divided to form three genera, *Ricciocarpus*, *Ricciella*, and *Euriccia*; *Cephalozia*, to form *Eucephalozia* and *Cephaloziella*.

The work is one which will prove to be very valuable, and it will be particularly useful in classifying material which does not possess the organs of fructification.

H. S. R.

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